

Date: Tuesday, 4/10/2007 1:18:28 PM  
 User: Jean-Luc Menard

## Process Sheet

D2914

Customer : CC-DAR01 Dart Aerospace Ltd.	Drawing Name : INITIAL PROTOTYPE TEMPLATE
Job Number : 00197A	
Estimate Number : 10068	
P.O. Number :	Part Number : INITIAL PROTOTYPE
This Issue : 4/10/2007 S.O. No. :	Drawing Number : N/A
Prsht Rev. : NC	Project Number : N/A
First Issue : 11 Type : TOOLING	Drawing Revision : N/A
Previous Run : 00196A	Material : N/A
Written By : <i>JL Menard</i>	Due Date : 4/17/2007
Checked & Approved By :	Qty: 1 Um: Each
Comment : Project #: 00197	
Description: <i>Manufacturing</i>	

Additional Product

Job Number:



Seq. #:	Machine Or Operation:	Description :
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1.0

MFG ENGINEERING

MFG ENGINEERING



Comment: MFG ENGINEERING

1-Manufacture Tooling

2-Drill tube as per Dwg D2904 Using DT8938

*Extension D2914 B12228①*  
*" " B11306①*

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User: Jean-Luc Menard

## Process Sheet

Customer: CC-DAR01 Dart Aerospace Ltd.

Drawing Name: INITIAL PROTOTYPE TEMPLATE

Job Number: 00197A

Part Number: INITIAL PROTOTYPE

Job Number:



Seq. #:

Machine Or Operation:

Description :

2.0

QC6

DIMENSIONAL CHECK



Comment: DIMENSIONAL CHECK

100% INSPECTION OF DRILLED TUBES

DP 7-4-25

3.0

QC8

SECOND CHECK



**ENGINEERING  
APPROVAL**



Comment: SECOND CHECK

07-4-25

4.0

PG

PURCHASING



Comment: PURCHASING

Attached certificate of conformity for raw material and subcomponents use for this w/o

CY07/06/06

5.0

QC21

FINAL INSPECTION/W/O RELEASE



Comment: FINAL INSPECTION/W/O RELEASE

07/06/06

Job Completion





DESIGN CP	DRAWN BY CP	DART AEROSPACE USA, INC. BELLEVUE, WA	
CHECKED [Signature]	APPROVED [Signature]	DRAWING NO. D2904	Rev. B SHEET 1 OF 3
DATE 00.06.21		TITLE SA 315B SKIDTUBE ASSEMBLY	SCALE NTS
A	99.09.09	NEW ISSUE	
B	00.06.21	CHANGED ANGLES FOR HOLES	

PARTS LIST:

Qty -041	Qty -042	Part Number	Description
X		D2904-041	LH SKIDTUBE ASSEMBLY
	X	D2904-042	RH SKIDTUBE ASSEMBLY
2	2	D2646	CAP
4	4	D2648-3	WEARPAD
1	1	D2648-5	WEARPAD
1	1	D2656-13	WEARSHOE
1	1	D2656-33	WEARSHOE
1		D2904-1	SKIDTUBE
	1	D2904-2	SKIDTUBE
1	1	D2905	WEB
1	1	D2907	WEARSHOE
11	11	D2909	CROSS BOLT SPACER
2	2	D2910	SKIDTUBE DOUBLER
2	2	D2911	SKIDTUBE DOUBLER
2	2	D2912	SKIDTUBE DOUBLER
50	50	ALS7-1032-130 or AKS4-1032-130 or ALS4-1032-130 or ALS7-1032-130	INSERT
54	54	AN960JD10L	WASHER
256	256	MS20601AD4W3	RIVET
54	54	MS27039-1-08	SCREW

REFERENCE ONLY

RELEASED  
00.09.01 [Signature]

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CHECKED <i>[Signature]</i>	APPROVED <i>[Signature]</i>	DRAWING NO. D2904	Rev. B SHEET 2 OF 3
DATE 00.06.21		TITLE SA 315B SKIDTUBE ASSEMBLY SCALE 1:20	

REFERENCE ONLY

GENERAL NOTES:

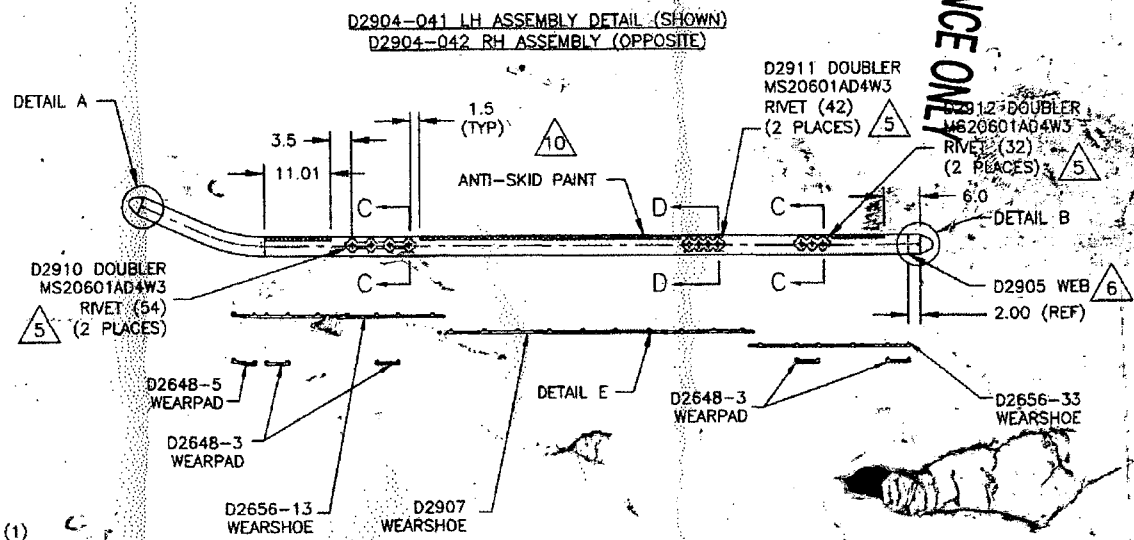
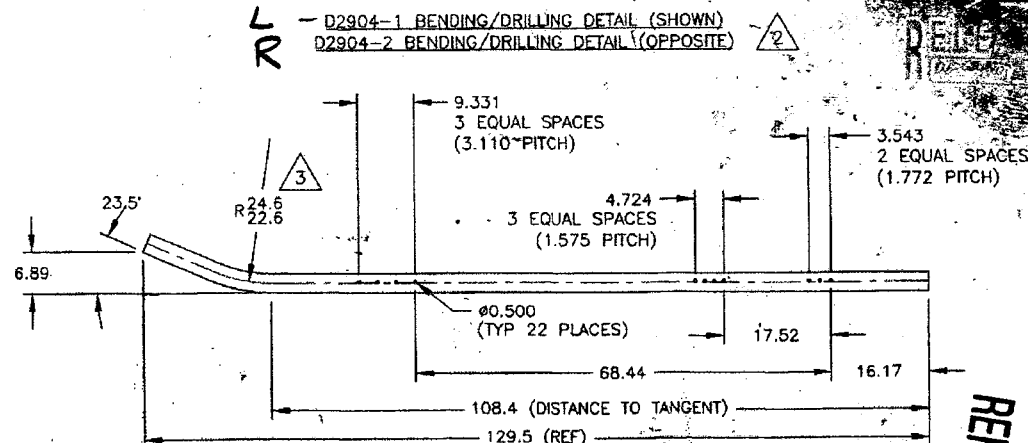
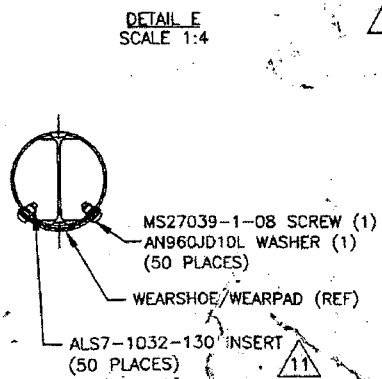
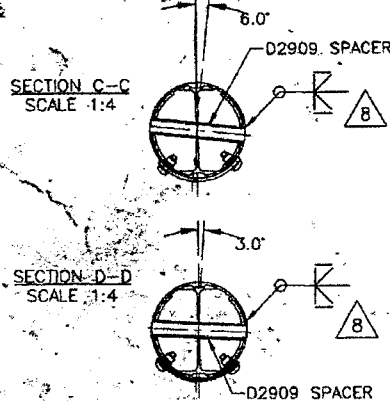
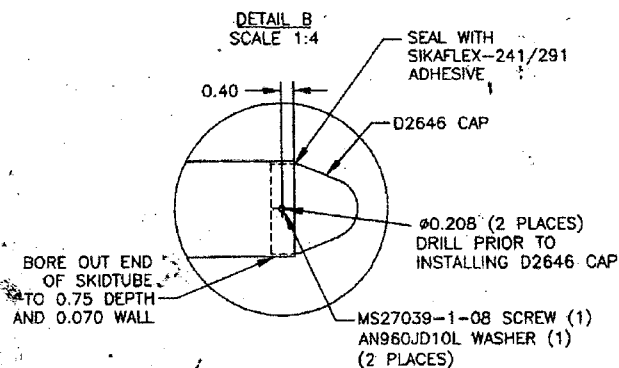
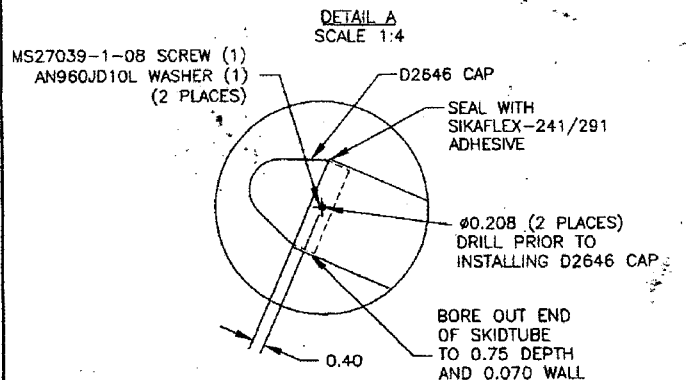
1. TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
2. MAKE D2904-1 AND D2904-2 FROM D2914 EXTRUSION (INITIAL LENGTH = 142.0).
3. DAMAGE TOLERANCE ON BENDING:  
THERE SHOULD BE NO VISIBLE WRINKLES IN THE BEND FROM THE GROUND TO A HEIGHT OF 7 INCHES ABOVE THE GROUND. NO GOUGING IS ACCEPTABLE IN THE FLAT PORTION OF THE TUBE. GOUGES UP TO 0.020 ARE ACCEPTABLE IN THE BENT PORTION OF THE TUBE. TUBE O.D. SHOULD BE  $3.150 \pm 0.010$  IN THE FLAT PORTION OF THE TUBE. A MAXIMUM REDUCTION IN DIAMETER OF 0.150" IS ACCEPTABLE IN THE BENT PORTION OF THE TUBE.
4. ALL HOLES DRILLED ON CENTERLINES EXCEPT THOSE NOTED BY SECTION C-C.
5. DRILL #30 HOLES ( $\varnothing 0.128$  REF) TO LINE UP WITH  $\varnothing 0.128$  HOLES IN D2910/D2911/D2912 DOUBLERS. C'SINK  $\varnothing 0.239 \times 100^\circ$ .
6. BOND D2905 WEB INTO D2904-1 (OR D2904-2) OUTER TUBE WITH NON-STRUCTURAL SIKAFLEX-241/291 ADHESIVE PER DART QSI 015. ENSURE HOLES LINE-UP.
7. WELDING TO BE DONE PER DART QSI 004.
8. AFTER DRILLING, BENDING, AND INSTALLING WEB & DOUBLERS, PERFORM THE FOLLOWING FOR  $\varnothing 0.500$  HOLES ONLY:
  - CHAMFER HOLE  $0.050 \times 45^\circ$
  - INSERT D2909 SPACER (11 PLACES)
  - WELD INTO PLACE
  - GRIND FLUSH
  - DRILL OUT SPACER TO  $\varnothing 0.406$
9. FINAL CONFIGURATION SHOULD HAVE THE FOLLOWING MINIMUM MECHANICAL PROPERTIES:
  - MINIMUM YIELD TENSILE STRENGTH = 35 ksi
  - MINIMUM ULTIMATE TENSILE STRENGTH = 38 ksi
10. FINISH:
  - ACID ETCH, ALODINE ASSEMBLY PER DART QSI 005 4.1 PRIOR TO INSTALLING D2905 WEB AND D2910/D2911/D2912 DOUBLERS.
  - POWDER COAT WHITE (REF. 4.3.5.1) PER DART QSI 005 4.3
  - BLACK ANTI-SKID PAINT AS INDICATED TO 1.0 ABOVE SKIDTUBE CENTER-LINE PER DART 005 4.4 (OPTIONAL).
11. DRILL  $\varnothing 0.297$  FOR ALS7-1032-130 INSERT USING DT8395 BEFORE FINISH. INSTALL ALS7-1032-130 INSERTS AFTER FINISH.

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00.09.01 *[Signature]*

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		DATE		TITLE SA 3158 SKIDTUBE ASSEMBLY	SCALE 1:20
		00.06.21			

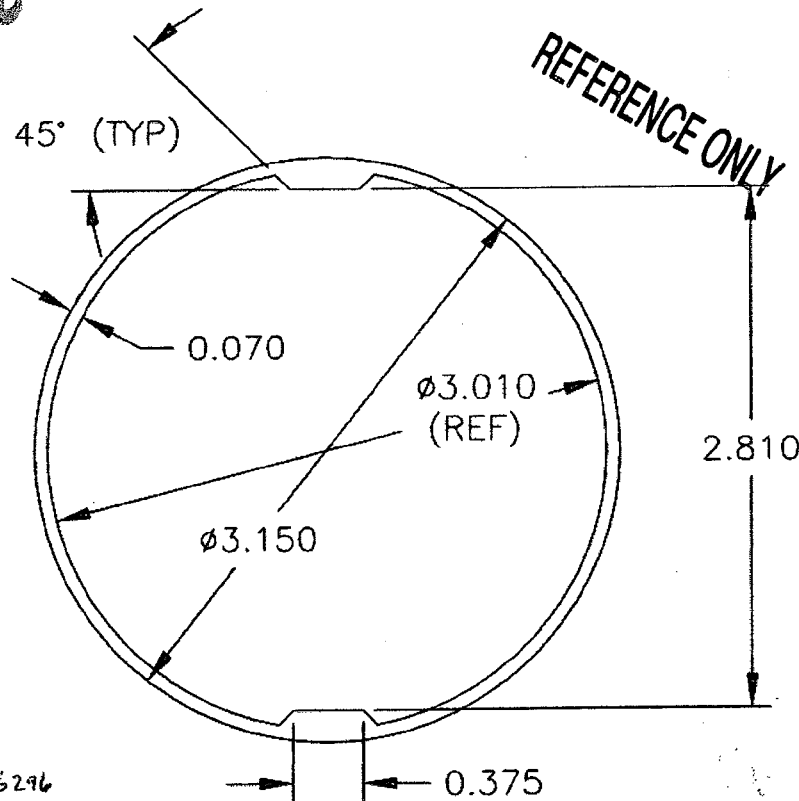
REFERENCE ONLY

23571  
22  
23



DESIGN <i>CP</i>	DRAWN BY <i>RF</i>	DART AEROSPACE USA, INC. BELLEVUE, WA	
CHECKED <i>CP</i>	APPROVED <i>#</i>	DRAWING NO. D2914	REV. A SHEET 1 OF 1
DATE 99.09.14		TITLE EXTRUSION	SCALE 1:1
A	99.09.14	NEW ISSUE	
A1	01.04.17	ADD NOTE #7 <i># CP</i>	

RELEASED  
99.09.28 DS



\* CAN ALSO BE  
MANUFACTURED USING  
CARADON INDIALEX DIE MH-36296

### GENERAL NOTES

- BON L (PREFERRED)\**
- MANUFACTURED WITH ~~CARADON INDIALEX~~ DIE # ~~TBD~~ *DAI-897126* *CP 00.06.08*
  - MATERIAL: 6061-T6 (QQ-A-200/8)  
MINIMUM YIELD TENSILE STRENGTH = 35 ksi  
MINIMUM ULTIMATE TENSILE STRENGTH = 40 ksi  
MINIMUM ELONGATION = 8 %  
A SAMPLE FROM EACH BATCH WILL BE PULL TESTED TO ASTM STANDARD B221 BY AN APPROVED TESTING FACILITY TO ENSURE THAT THE BATCH MEETS THE ABOVE MINIMUM MECHANICAL PROPERTIES.
  - BREAK ALL SHARP CORNERS 0.010 MAX.
  - NO TOOLING MARKS.
  - TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
  - ALL DIMENSIONS ARE IN INCHES.
  - PART NUMBER IS D2914-XXX WHERE XXX IS CUT LENGTH IN INCHES (EG. D2914-142 IS 142" LONG)






# BON L CANADA INC.

1850 Clements Road  
Pickering, Ontario L1W 3R8  
Tel: (905) 427-6550  
Fax: (905) 427-2202

## TEST CERTIFICATE / CERTIFICAT D'ANALYSE

Address inquiries to/Adresser toutes communications à  <b>Bon L Canada Inc</b> <b>Pickering Works Account</b> <b>1850 Clements Rd.</b>		ST TV	Sales Office Bureau de vente	Page	Révision No.	Date	Sales order number Numéro de commande							
				1		000710	627246							
Customer/Client  <b>DART AEROSPACE LTD.</b> <b>1270 ABERDEEN ST.</b> <b>HAWKESBURY, ON</b> <b>K6A 1K7</b>		Ship to/Livrer à  <b>DART AEROSPACE LTD.</b> <b>1270 ABERDEEN ST.</b> <b>HAWKESBURY, ON</b> <b>K6A 1K7</b>		Customer purchase order Commande du client <b>2002505</b>		Date of order Date de commande <b>000616</b>								
				Terms of shipment/Conditions d'expédition  <b>Prepaid</b>										
Terms of payment/Conditions de paiement  <b>Net 30</b>		Via  <b>J.B. HUNT</b>		<b>07/10/00</b>		Ship pt/ d'expédition <b>MILL</b>								
CCN/NCC <b>046024-01</b>		Edition <b>GST 7% Extra</b>		Items/Articles		Specification  <b>AMS-QQ-A-200/8 &amp; ASTM B221</b>								
Item Article N°	Code	Shape Profilé	Alloy Alliage	Temper Etat	Length Longueur m	Description Désignation	Quantity/Quantité Ordered Commandée	Unit Unité	Unit price Prix unitaire	Per Par	Shipment Estimated Expédition prévue	PS PE	Shipping Tolerance Tolérance d'expédition	Code Réserve
1		DAA-897126	6061	T6	142"	CUSTOM HOLLOW	20 103	Pcs Kgs						
<b>LOT: 245966</b>							<b>DATE TESTED DATE DU TEST 00/07/02</b>							
SAMPLE ID	TENSILE STRENGTH (MPA) (KSI)		0.2% YIELD STRENGTH (MPA) (KSI)		% ELONGATION	HARDNESS (RF)	CONDUCTIVITY (% IACS)							
1	309.8 44.9		278.5 40.4		11.0	89	0							
IDENTIFICATION		(MPA) (KSI) CHARGE DE RUPTURE	(MPA) (KSI) LIMITE ÉLASTIQUE À 0.2%		ALLONGEMENT %	DURETÉ (RF)	CONDUCTIVITÉ (% d'IACS)							
CHEMICAL COMPOSITION/COMPOSITION CHIMIQUE														
OTHERS/AUTRES														
Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Zr	V	Ga	B	EACH CHACUN	TOTAL	ALUMINUM
MAX	.8	.7	.40	.15	1.2	.35	.25	.15	-	-	-	.05	.15	-
IN	.4	-	.15	-	.8	.04	-	-	-	-	-	-	-	-

DATE: 10 Jul 00  
  
  
 APPROVED: / APPROUVÉ PAR:



Bacon Donaldson  
12271 Horseshoe Way  
Richmond, BC, Canada V7A 4V4

Phone: (604) 277-2322  
Fax: (604) 274-7225

Consulting Engineers  
A Rockwood Company

ISO 9002

## TENSILE TEST REPORT

DART AEROSPACE LTD.  
1270 Aberdeen Street  
Hawkesbury, Ontario  
K6A 1K7

Date: February 17, 2000  
File No: 0L0064  
P.O. No: 2002193  
Report No: 1

Attention: Kristina Young

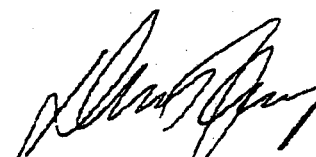
Description: Aluminum Alloy Extrusion Sample  
Part #D2914, Description #B11306

Test Specification: ASTM B221

Material Specification: Aluminum

Specimen Identification	Yield Strength (0.2% Offset) (psi)	Ultimate Strength (psi)	% Elongation (in 2")	% Reduction in Area
Part Description B11306	36,300	41,700	14.4	--
Specification Requirements	--	--	--	--

BACON DONALDSON

  
David Kwong, C.E.T.

- Province of British Columbia authorized testing agency for boiler pressure vessel and pressure piping: No. TA-15.
- Test machine calibrated to ASTM E4 and CSA A23.2-9C specifications.
- Specimens will be disposed of after 30 days unless alternate provisions are made.

0L0064R1

## Rapport des propriétés mécaniques Mechanical Properties Test Report

Client / Customer : **DART AEROSPACE LTD**  
Adresse / Address : **1270 ABERDEEN STREET  
HAWKESBURY ONT, K6A 1K7**

# commande Indalex / Indalex order # : **9100533**  
# bon de commande / Purchase order # : **2001855**  
# de matrice / Die # : **MH 36 296** Description : **HELICOPTER LANDING GEAR**  
Alliage & trempage / Alloy & temper : **6061 T-6**  
# de coulée / Cast # : **22312**  
# de contrôle / Control # : **41064-4**

Composition chimique typique / Typical chemical composition :  
Si:0.72-0.76/ Fe:0.20-29/ Cu:0.24-0.28/ Mn:0. 0.06-0.10/ Mg:0.84-0.88/ Cr:0.05-0.09/ Zn:0.08max /Ti:0.04max

Dureté Rockwell E / Rockwell E Hardness : **90 HRE**

	Min.requis Min.required	Résultat actuel Actual results
Contrainte élastique Yield stress (psi)	<b>35 000</b>	<b>35 738</b>
Tension ultime Ultimate stress (psi)	<b>38 000</b>	<b>41 193</b>
% élongation dans 2" % elongation in 2"	<b>8</b>	<b>10</b>

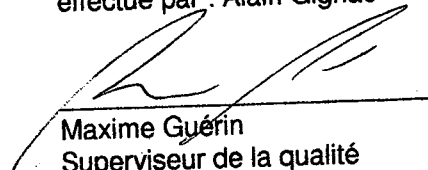
Nous certifions que le matériel fourni rencontre les exigences chimiques telles qu'annoncées par l'Association de l'Aluminium ainsi que les exigences de nos procédures de contrôle de qualité.

We hereby certify that the material supplied meets the chemical properties as published by the Aluminum Association, and requirements of our quality control procedures.

Sincèrement vôtre,  
Yours truly,

date : **18/01/2000**

effectué par : **Alain Gignac**

  
**Maxime Guérin**  
Superviseur de la qualité  
Quality supervisor

CARADON INDALEX, Div.de Caradon Ltée

Division de Caradon Limitée